



Volunteer Lake Assessment Program Individual Lake Reports

CRYSTAL LAKE, GILMANTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	17,627	Max. Depth (m):	16.2	Flushing Rate (yr ⁻¹)	3.8	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	441	Mean Depth (m):	5	P Retention Coef:	0.48	1989	OLIGOTROPHIC	
Shore Length (m):	7,600	Volume (m ³):	8,998,500	Elevation (ft):	623	2003	OLIGOTROPHIC	

TROPHIC CLASSIFICATION

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

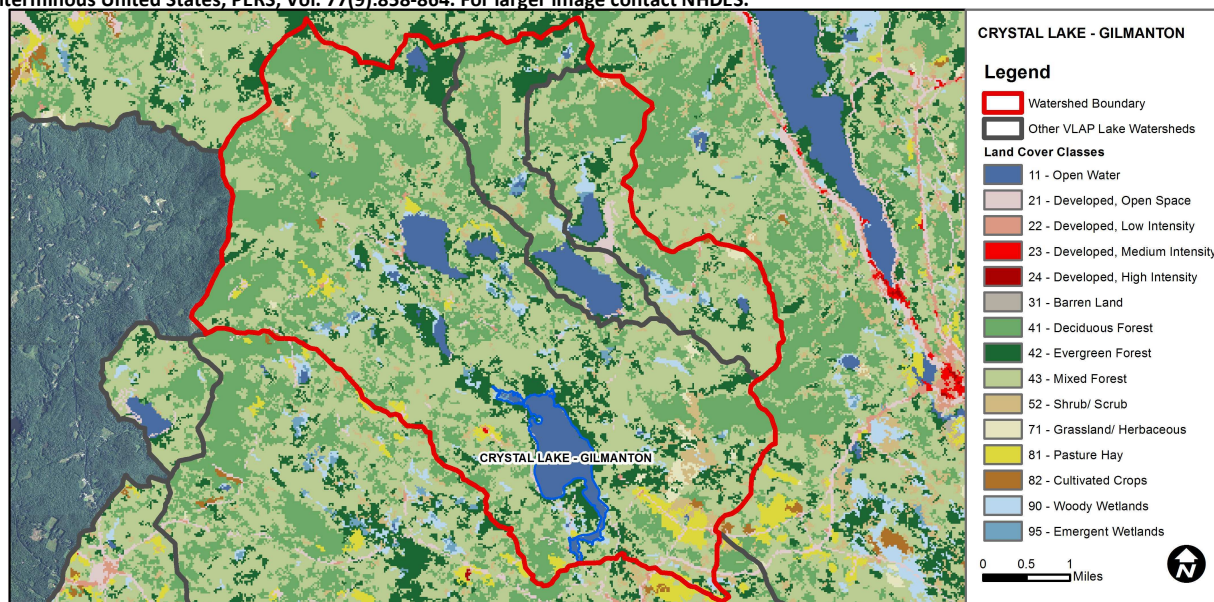
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

CRYSTAL LAKE-TOWN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
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WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	6.31	Barren Land	0	Grassland/Herbaceous	0.65
Developed-Open Space	1.27	Deciduous Forest	27.82	Pasture Hay	1.57
Developed-Low Intensity	0.13	Evergreen Forest	12.1	Cultivated Crops	0.1
Developed-Medium Intensity	0.01	Mixed Forest	44.52	Woody Wetlands	2.22
Developed-High Intensity	0	Shrub-Scrub	2.8	Emergent Wetlands	0.52



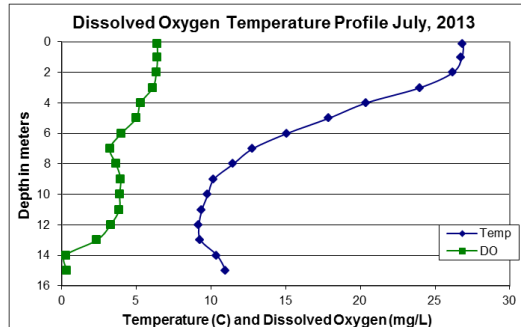
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

CRYSTAL LAKE, GILMANTON, NH

2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- CHLOROPHYLL-A:** Chlorophyll levels were stable and low throughout the summer. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began. We hope to see this continue!
- CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride were low and slightly less than the state medians. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- TOTAL PHOSPHORUS:** Epilimnetic and metalimnetic phosphorus remained relatively low throughout the summer and less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Hypolimnetic phosphorus increased slightly as the summer progressed and dissolved oxygen levels decreased. Covered Bridge Bk., Wood Bridge Bk. and Outlet phosphorus levels were low on each sampling event. Nats Bridge Brook phosphorus levels were below average for that station and likely naturally higher due to wetland influences. The Brook phosphorus levels were slightly elevated in July and laboratory noted brown water indicating higher than normal organic content may have contributed to the phosphorus; otherwise phosphorus levels were within the historical average since 2000.
- TRANSPARENCY:** Transparency was stable throughout the summer and better than the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- TURBIDITY:** Epilimnetic, Covered Bridge Bk., The Brook, and Wood Bridge Bk. turbidities were low on each sampling event. Metalimnetic turbidity was slightly elevated in September potentially due to a layer of algae. Hypolimnetic turbidity increased slightly as the summer progressed likely due to the release of organic compounds from bottom sediments as dissolved oxygen levels decrease. Nats Bridge Bk. turbidity was greater than other stations however within its' historical range.
- pH:** Deep spot pH levels were lower than desirable range 6.5 – 8.0 units. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.
- RECOMMENDED ACTIONS:** Overall water quality in 2013 was stable and good. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff and maintaining vegetated buffers in the watershed. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management". Keep up the great work!



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	NVS	VS	ntu	
Covered Bridge Brook			3	30.2	10			0.41	6.70
Epilimnion	4.30	2.53	3	27.8	9	4.25	4.14	0.59	6.48
Metalimnion				31.0	9			1.24	6.03
Hypolimnion				31.8	11			2.44	6.04
Nats Bridge Brook			3	30.7	21			1.62	6.20
Outlet			3	30.3	11			1.18	6.57
The Brook			3	19.9	19			0.43	6.33
Wood Bridge Brook			3	23.6	9			0.61	6.67

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Degrading	Data significantly decreasing.	Chlorophyll-a	Improving	Data significantly decreasing.
Conductivity	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.

